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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/613,378 | 07/03/2003 | Abdurrahman Sezginer | TWI-32410 | 7200 |

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STALLMAN & POLLOCK LLP
SUITE 2200
353 SACRAMENTO STREET
SAN FRANCISCO, CA 94111

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| EXAMINER |
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STOCK JR, GORDON J

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| ART UNIT | PAPER NUMBER |
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2877

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/613,378

Applicant(s)

SEZGINER ET AL.

Examiner

Gordon J. Stock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 6-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 20030703.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of **claims 1-5** in the reply filed on May 16, 2005 is acknowledged. **Claims 6-13** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 16, 2005.

Drawings and Specification

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **106** of Fig. 2b; **605** of Fig. 6a; **702** of Fig. 7a. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **102** of Fig. 1b; **800** of Fig. 8. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid

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abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's disclosure of prior art in view of **Brill et al. (WO 02/25723 A2)-cited by applicant**.

As for **claims 1-2**, applicant's disclosure of prior art teaches the following: first and second patterns, each including an upper grating layer and a lower grating layer (Fig. 2a and 2b: 202X and 202X'), each grating layer including a series of substantially parallel lines (Fig. 2a: 202X and 202X'), the upper grating lines of each test pattern aligned to be substantially parallel to the lower grating lines of the same test pattern (Fig. 2b: 204U, 204U', 204L, 204L'), each test pattern having an associated offset bias defined by the lateral offset of the upper and lower grating layers of the test pattern (Fig. 2B: 214, 214'), where a single line pitch is used for all gratings in all test patterns (Fig. 2B: pitch). As for the difference between the offset bias of the

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first test pattern and the offset bias of the second test pattern is substantially equal to the line pitch divided by four and the magnitude of the offset bias of the first test pattern is equal to one eighth of the line pitch, the applicant's disclosure of prior art is silent. However, Brill in a lateral shift measurement teaches that optimal sensitivity for a grating pair is at an offset bias of 75 which is one eighth of 600 nm (Fig. 5, page 10) with pairs of gratings having offsets with similar magnitudes but differing directions (page 6, lines 20-40). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the difference between the first test pattern and second test pattern be equal to one fourth the line pitch and the magnitude of the offset bias of a test pattern be one eighth of the line pitch, for maximum sensitivity for overlay measurements are with grating pairs having a bias offset of one eighth of the line pitch.

As for **claim 3**, applicant's disclosure of prior art in view of Brill discloses everything as above (see **claim 1**). In addition, applicant's disclosure of prior art teaches that the upper and lower grating lines of the first test pattern are substantially parallel to the upper and lower grating lines of the second test pattern (Fig. 2a: 202X, 202X'; Fig. 2b: 208U and 208L).

As for **claim 4**, applicant's disclosure of prior art in view of Brill discloses everything as above (see **claim 1**). In addition, applicant's disclosure of prior art teaches a third test pattern, including an upper grating layer and a lower grating layer, each grating layer including a series of substantially parallel lines, the lines of the upper and lower gratings of the third test pattern aligned to be substantially parallel to each other, where the lines in the third test pattern are spaced at the same line pitch used for the first and second test patterns (Fig. 2a: 202Y or 202Y'; page 4, lines 17-18).

6. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's disclosure of prior art in view of **Brill et al. (WO 02/25723 A2)**-cited by applicant further in view of **Niu et al. (6,855,464)**.

As for **claim 5**, applicant's disclosure of prior art in view of Brill discloses everything as above (see **claim 4**). As for the three test patterns having three different angular orientations in the plane of the wafer, applicant's disclosure of prior art is silent. However, Niu in grating test patterns teaches at least three grating patterns in three different angular orientations on the wafer to reduce random error at different orientation angles (Fig. 1; col. 3, lines 10-35; col. 4, lines 40-55). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have at least three test patterns with different angular orientations on the plane of wafer in order to determine overlay offset at a plurality of angular orientations to reduce random error in overlay measurements.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.


The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


gs

May 26, 2005


Zandra V. Smith
Primary Examiner
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